WHAT IS CLAIMED IS:

1. An interferometer system for measuring displacement, along at least two directions within a three dimensional system of coordinates, of an object in a plane substantially parallel to a two dimensional plane, said interferometer system comprising:

a plane mirror interferometer system;

a differential plane mirror interferometer system; and

a beam splitter arrangement configured to split a radiation beam associated with said plane mirror interferometer system and a radiation beam associated with said differential plane mirror interferometer system into respective measuring beams and respective reference beams.

2. The interferometer system of Claim 1, wherein said beam-splitter arrangement includes a transparent body having a beam-splitting surface and a first reflector which is integrally connected to said transparent body and which has a reflective surface that extends substantially parallel to the beam splitting surface.

3. An interferometer system for measuring displacement along at least two directions in an XYZ system of co-ordinates, of an object in a plane substantially parallel to an XY plane, said interferometer system comprising:

at least one measuring mirror fixedly connected to said object and comprising a plurality of measuring mirror areas;

at least one reference mirror comprising at least one reference mirror area;

a beam generator configured to generate a plurality of radiation beams, said beam generator comprising a beam-splitter block having a beam splitting surface;

a plurality of radiation-sensitive detectors configured to convert radiation beams reflected towards said detectors into electric measuring signals;

wherein said beam splitter block is configured to split at least one first beam of said plurality of radiation beams into a first measuring beam and a first reference beam, said

first reference beam only being reflected by one or more first reference mirrors located in a fixed position with respect to said beam-splitter block, said first measuring beam being reflected by a first measuring mirror area of said plurality of measuring mirror areas, and

wherein said beam splitting surface is configured to split at least one second beam of said plurality of radiation beams into a second measuring beam and a second reference beam, said second measuring beam being reflected by a second measuring mirror area of said plurality of measuring mirror areas, and said second reference beam being reflected by a first reflector that is fixedly positioned with respect to said beam-splitter block and by at least one third mirror area, which is movable with respect to said beam-splitter block.

4. The interferometer system of Claim 3, wherein said at least one third mirror area comprises a third measuring mirror area fixed to said object.

5. The interferometer system of Claim 3, wherein said at least one third mirror area comprises a second reflector fixed to said object and a second reference mirror area located in a fixed position with respect to said beam-splitter block, wherein said second reflector is arranged to direct said second reference beam towards said second reference mirror area.

6. The interferometer system of Claim 3, wherein at least one third mirror area comprises a fourth mirror area which is fixed to a second object, which is movable with respect to the beam-splitter block.

7. The interferometer system of Claim 3, wherein said plurality of radiation beams comprises at least three first radiation beams occupying more than one plane and at least one second radiation beam in a position between two of said at least three first radiation beams.

8. The interferometer system of Claim 3, wherein said plurality of radiation beams comprises at least three first radiation beams occupying more than one plane and at least one second radiation beam in a position outside a polygon volume formed by connecting respective first reference beams and respective first measuring beams.

9. The interferometer system of Claim 3, wherein said beam-splitter block comprises a transparent body having a beam-splitting surface and a first reflector which is integrally connected to said transparent body and which has a reflective surface that extends substantially parallel to the beam splitting surface.

10. A lithographic apparatus comprising:

an illumination system for providing a beam of radiation;

a support structure for supporting a patterning device that serves to impart said beam of radiation with a pattern in its cross-section;

a substrate holder for holding a substrate;

a projection system for projecting said patterned beam onto a target portion of the substrate; and

an interferometer system for measuring displacement of at least one of said patterning device and said substrate, wherein said interferometer system comprises,

a plane mirror interferometer system;

a differential plane mirror interferometer system; and

a beam-splitter block containing at least one beam splitter, at least one mirror, and at least one retro-reflector, such that said beam splitter block is configured to split a beam associated with said plane mirror interferometer system and a beam associated with said differential plane mirror interferometer system into respective measuring beams and respective reference beams.

11. A lithographic apparatus comprising:

an illumination system for providing a beam of radiation;

a support structure for supporting a patterning device that serves to impart said beam of radiation with a pattern in its cross-section;

a substrate holder for holding a substrate;

a projection system for projecting said patterned beam onto a target portion of the substrate; and

an interferometer system for measuring displacement of at least one of said patterning device and said substrate, wherein said interferometer system comprises,

at least one measuring mirror fixedly connected to at least one of said patterning device and said substrate, said at least one measuring mirror comprising a plurality of measuring mirror areas;

at least one reference mirror comprising at least one reference mirror area;

a beam generator configured to generate a plurality of beams, said beam generator comprising a beam-splitter block having a beam splitting surface; and

a plurality of radiation-sensitive detectors configured to convert radiation beams reflected towards said detectors into electric measuring signals,

wherein said beam splitter block is configured to split at least one first beam of said plurality of radiation beams into a first measuring beam and a first reference beam, said first reference beam only being reflected by one or more first reference mirrors located in a fixed position with respect to said beam-splitter block, said first measuring beam being reflected by a first measuring mirror area of said plurality of measuring mirror areas, and

wherein said beam splitting surface is configured to split at least one second beam of said plurality of radiation beams into a second measuring beam and a second reference beam, said second measuring beam being reflected by a second measuring mirror area of said plurality of measuring mirror areas, and said second reference beam being reflected by a first reflector that is fixedly positioned with respect to said beam-splitter block and by at least one third mirror area, which is movable with respect to said beam-splitter block.

12. The interferometer system of Claim 11, wherein said at least one third mirror area comprises a third measuring mirror area fixed to said object.

13. The interferometer system of Claim 11, wherein said at least one third mirror area comprises a second reflector fixed to said object and a second reference mirror area located in a fixed position with respect to said beam-splitter block, wherein said second reflector is arranged to direct said second reference beam towards said second reference mirror area.

14. The interferometer system of Claim 11, wherein at least one third mirror area comprises a fourth mirror area which is fixed to a second object, which is movable with respect to the beam-splitter block.

15. The interferometer system of Claim 11, wherein said plurality of radiation beams comprises at least three first radiation beams occupying more than one plane and at least one second radiation beam in a position between two of said at least three first radiation beams.

16. The interferometer system of Claim 11, wherein said plurality of radiation beams comprises at least three first radiation beams occupying more than one plane and at least one second radiation beam in a position outside a polygon volume formed by connecting respective first reference beams and respective first measuring beams.

17. The interferometer system of Claim 11, wherein said beam-splitter block comprises a transparent body having a beam-splitting surface and a first reflector which is integrally connected to said transparent body and which has a reflective surface that extends substantially parallel to the beam splitting surface.

18. A device manufacturing method comprising:

providing a substrate;

providing a beam of radiation using an illumination system;

using patterning device to impart beam of radiation with a pattern in its cross-section; and

projecting said patterned beam of radiation onto a target portion of the substrate,

wherein a position of at least one of said patterning device and said substrate is determined by an interferometer system, said interferometer system comprising,

at least one measuring mirror fixedly connected to at least one of said patterning device and said substrate, said at least one measuring mirror comprising a plurality of measuring mirror areas,

at least one reference mirror comprising at least one reference mirror area,

a beam generator configured to generate a plurality of beams, said beam generator comprising a beam-splitter block having a beam splitting surface, and

a plurality of radiation-sensitive detectors configured to convert said beams which are reflected towards said detectors into electric measuring signals,

wherein said beam splitter block is configured to split at least one first beam of said plurality of beams into a first measuring beam and a first reference beam, said first reference beam only being reflected by one or more first reference mirrors located in a fixed position with respect to said beam-splitter block, said first measuring beam being reflected by a first measuring mirror area of said plurality of measuring mirror areas, and

wherein said beam splitting surface is configured to split at least one second beam of said plurality of beams into a second measuring beam and a second reference beam, said second measuring beam being reflected by a second measuring mirror area of said plurality of measuring mirror areas, and said second reference beam being reflected by a first reflector that is fixedly

positioned with respect to said beam-splitter block and by at least one third mirror area, which is movable with respect to said beam-splitter block.

19. The method of Claim 18, wherein said at least one third mirror area of said interferometer system comprises a third measuring mirror area fixed to said object.

20. The method of Claim 18, wherein said at least one third mirror area of said interferometer system comprises a second reflector fixed to said object and a second reference mirror area located in a fixed position with respect to said beam-splitter block, wherein said second reflector is arranged to direct said second reference beam towards said second reference mirror area.

21. The method of Claim 18, wherein said at least one third mirror area of said interferometer system comprises a fourth mirror area which is fixed to a second object, which is movable with respect to the beam-splitter block.

22. The method of Claim 18, wherein said plurality of beams of said interferometer system comprises at least three first radiation beams occupying more than one plane and at least one second radiation beam in a position between two of said at least three first radiation beams.

23. The method of Claim 18, wherein said plurality of beams of said interferometer system comprises at least three first beams occupying more than one plane and at least one second beam in a position outside a polygonal volume formed by connecting respective first reference beams and respective first measuring beams.

24. The method of Claim 18, wherein said beam-splitter block of said interferometer system comprises a transparent body having a beam-splitting surface and a first reflector which is integrally connected to said transparent body and which has a reflective surface that extends substantially parallel to the beam splitting surface.